

Appl. No. 10/002,063
Amtd. dated 1/24/05
Reply to Office Action of 11/18/04

PATENT
Docket: 000067

REMARKS

Claims 1-33 are pending in the present application. In the above amendments, claims 1-4, 6-12, 18-22, 25, 26 and 29 have been amended, and new claims 30-33 have been added. Therefore, after entry of the above amendments, claims 1-33 will be pending in this application. Applicants believe that the present application is now in condition for allowance, which prompt and favorable action is respectfully requested.

Allowed Claim 17

Applicants note with appreciation the allowance of claim 17.

Objected to Claims 4, 7 and 9

Claims 4, 7 and 9 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants would like to keep claims 4, 7 and 9 in dependent form in the present amendment.

Rejection of Claims 1, 2, 3, 5, 10-16 and 18-29 Under 35 U.S.C. §102(b)

Claims 1, 2, 3, 5, 10-16 and 18-29 stand rejected under 35 U.S.C. §102(b) as being anticipated by Sutton (U.S. Patent No. 5,805,648).

Sutton describes searching a large window of PN chip offset hypotheses. If an energy signal is found that might indicate the presence of a pilot signal having one of the chip offsets of the large window, then a subset of offset hypotheses, or a small window, is searched. (See the Abstract.) The small window is also called a zoom window.

Claim 1 of the present invention, as amended, recites:

"A method for searching for pilots in a wireless communication system, comprising:
searching over a designated code space for peaks in a received signal and providing a set of detected peaks;
forming a plurality of dwell windows for the detected peaks, wherein the dwell windows have variable sizes and cover variable numbers of detected peaks both being determined based on locations of the detected peaks in the designated code space; and

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searching over the dwell windows for peaks in the received signal and providing a set of one or more candidate peaks."

Applicants submit that claim 1 is not anticipated by Sutton for at least the following reasons.

First, Sutton does not describe the use of dwell windows having variable sizes, as claim 1 recites. Sutton searches over "large" windows of a "fixed number of hypotheses." (See column 5, line 23-24.) Table I in column 5 of Sutton gives the window sizes for different stages. Presumably, the window size is fixed for each stage but can be different for different stages. When a peak is detected, the searcher zooms in on that peak and tests PN values in a "zoom" window close to the PN value that gave rise to the detected peak. (See column 6, lines 23-26.) Table II in column 6 gives the zoom window sizes for different stages. Table II indicates that the zoom windows for all stages have a fixed size of 6 PN offsets.

Second, Sutton does not describe the use of dwell windows covering variable numbers of detected peaks, as claim 1 recites. Instead, Sutton zooms in on each detected peak and searches a zoom window of 6 PN offsets. (See Table II.) Each zoom window is intended to cover a single detected peak. Using a fixed size zoom window and not accounting for detected peaks that are located nearby may give rise to the problem illustrated in FIG. 6A of the present application.

Third, Sutton does not describe determining both the variable sizes and the variable numbers of detected peaks for the dwell windows based on the locations of the detected peaks in the designated code space, as claim 1 recites. In Sutton, the zoom window is a fixed size, presumably centered at where the peak is detected, and intended to cover a single detected peak. In contrast, the variable size dwell windows of claim 1 can (1) effectively deal with detected peaks that are in clusters as well as detected peaks that are spread out and (2) allow for search/detection of the individual detected peaks.

For at least the above reasons, Applicants submit that claim 1 is not anticipated by Sutton. Claims 2, 3, 5, 10-16 are dependent on claim 1 and are not anticipated by Sutton for at least the reasons noted for claim 1. These dependent claims may recite additional features not described nor suggested by Sutton.

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For claim 3, Sutton does not describe "combining overlapping individual search windows" for the detected peaks. Instead, Sutton searches for peaks using fixed size large windows in four stages, as shown in Table I and Table II. Sutton then searches over each fixed size zoom window individually whenever a peak is detected.

For claim 5, Sutton does not describe "sorting the detected peaks based on their locations in the designated code space".

For claim 10, Sutton does not describe "the dwell windows are non-overlapping". In Sutton, the zoom windows have fixed size of 6 PN chips and can overlap if the detected peaks are located close to each other.

For claim 14, Sutton does not describe "the dwell windows are formed such that each detected peak is included in only one dwell window". This avoids a situation whereby a large detected peak is included in multiple dwell windows and is reported for each of these windows, thereby masking a smaller peak, as shown in FIG. 6A of the present application. Sutton does not take the precaution recited in claim 14 in forming the zoom windows. In FIG. 4 of Sutton, if a second small window (or zoom window) is formed for the sawtooth peak that is to the right of the largest peak, then this second small window may also contain the largest peak. This largest peak may then be reported for both small windows and may mask the sawtooth peak.

Independent claims 18, 22, and 26 have each been amended to recite the features noted above for claim 1. Claims 18, 22, and 26 are also not anticipated by Sutton for the reasons noted above for claim 1. Claims 19-21 are dependent on claim 18, claims 23-25 are dependent on claim 22, and claims 27-29 are dependent on claim 26. These dependent claims are also not anticipated by Sutton for at least the reasons noted for their base claims. These dependent claims may also recite additional features not described nor suggested by Sutton. For example, Sutton does not described "returning variable numbers of peaks for the variable-size search windows" (claim 19) or "forming variable-size search windows by combining overlapping fixed-size windows" (claim 21). Sutton also does not combine individual search windows for the detected peaks to form the dwell windows (claims 24 and 28).

Accordingly, the §102(b) rejection of claims 1, 2, 3, 5, 10-16 and 18-29 should be withdrawn.

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Rejection of Claims 6 and 8 Under 35 U.S.C. §103(a)

Claims 6 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sutton (U.S. Patent No. 5,805,648). The rejection states that Sutton does not disclose limiting the number of overlapping individual search, but that it would be obvious to one skilled in the art to have the feature of limiting the number of overlapping individual search so that the system can avoid waste of resources.

Applicants submit that claims 6 and 8 are patentable over Sutton for at least the following reasons. First, the Sutton does not describe all of the elements of base claim 1, as discussed above. Second, claims 6 and 8 recite additional features not taught nor suggested by Sutton and which can impact search performance.

Claims 6 recites "limiting the number of overlapping individual search windows to be combined for each dwell window." This limits the number of detected peaks covered by each dwell window, which may be desirable for search performance considerations. Applicants submit that limiting the number of overlapping individual search windows to be combined for each dwell window is not the same as limiting the number of "overlapping individual search".

Claim 8 recites "wherein the overlapping individual search windows are combined such that overlap between the dwell windows is minimized." This feature reduces the likelihood of a given detected peak appearing in multiple dwell windows, which can improve search performance. Sutton does not describe this feature.

Accordingly, the §103(a) rejection of claims 6 and 8 should be withdrawn.

New Claims 30-33

New claims 30-33 recited additional features of the invention. Claim 30 is dependent on claim 1 and is allowable for at least the reason noted above for claim 1. Claims 31-33 are dependent on allowed claim 17 and should also be allowable.

CONCLUSION

In light of the amendments contained herein, Applicant submits that the application is in condition for allowance, for which early action is requested.

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Respectfully submitted,

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